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Rear frame for a road grader

The invention concerns a rear frame for a grader, which is employed in road construction work to produce level surfaces of all kinds, and which includes the components or subassemblies of the rear counterpoise, lights and bumper, in accordance with the features in the preamble to claim 1.

For the currently employed graders from the production range of the applicant of types "F 106.5" and "F 156" according to the brochures with the designation "575.0/2-0101" and "E 578.1/1-0201" their reversing lights are bolted onto the sides of the rear frame. Which for graders because of an optimum axle load distribution between the front axle and the rear tandem axle in the absence of rear-mounted equipment is absolutely necessary, it is raised up from below into the rear frame and fixed to this with several screws. The bumper is formed from a strong end section of the rear frame itself.

Regarding this method of construction it is to be criticized on the one hand that it consists of too many individual parts, which complicates the design of the rear frame and for that reason leads to high production costs. On the other hand the rear counterpoise weight because of its unfavorable point of attachment is capable of being assembled only with difficulty. Furthermore it is a disadvantage that the rear frame, because of its actual function and its shape offers too few options for the mounting of various types of rear equipment, which limits its flexibility for the use of rear-mounted equipment. Finally rear frame designed in such a way is also not exactly advantageous from point of view of visual appearance.

For that reason the task of the invention is based upon creating a rear frame for road graders, which consists of few individual parts, where the point of attachment for the rear counterweight lies favorably from the point of view of simple assembly and disassembly, which offers the facility for the attachment of different pieces of rear-mounted equipment and which also still possesses an attractive appearance.

According to the invention this task is solved by the features of claim 1, in which features are listed in the subclaims, which further develop this solution in an advantageous manner. Through the uniting of the functions of the bumper and the rear counterpoise weight in a vertically aligned rear end plate extending across the entire breadth of the grader it brings about a reduction in the number of individual parts for the rear frame. The rear end plate, because of its arrangement right at the rear of the rear frame, assumes the function of a bumper. Its great width protects the entire rear part of the grader from dam-

age and its high weight takes care of the corresponding effectiveness of the protective function. The integration of the lights into the area of the outer ends of the rear end plate likewise does not require any extra parts and furthermore offers a more secure protection for the lights against destruction.

In an advantageous embodiment of the invention in accordance with the features of subclaim 2 the rear end-plate is formed as one piece, as even with a two-piece design, for its assembly and disassembly respectively a hoisting device must be employed anyway.

In a further preferred embodiment of the invention according to the features of sub-claim 3, the rear end-plate with proper use of the grader with a heavy piece of rear-mounted equipment a small wall thickness can be kept to, an optimum axle load distribution for the grader is achievable.

Conversely an expedient embodiment of the invention in accordance with the features of subclaim 4 is to be seen in that for the case of the grader without or only with a light piece of rear-mounted equipment, the wall thickness of the rear end-plate can be increased.

In a further development of the invention it is envisaged that in accordance with the features of subclaim 5, to increase the stability of the rear frame the rear ends of its left and right longitudinal beams are joined together by a rear transverse beam.

In a further variant of the invention in accordance with the features in subclaim 6 it has proved itself to fix the rear end-plate to the rear transverse beam easily removable, which can be done for example by means of sturdy screwed connections.

To sum up, the advantages of the invention are thus that because of the small number of individual parts the production costs are relatively low. Through the position of the rear end-plate on the free end of the rear frame it can also be installed and dismantled very easily. The large build of the rear end-plate offers technically simply several options for the attachment of several pieces of rear-mounted equipment, as a result of which the flexibility for this is increased. Finally this clear and simply organized construction of this rear frame offers also an attractive appearance.

The invention will now be explained in more detail using two example embodiments, in which the individual figure show:

Fig. 1: a perspective view of the left rear side of a grader with a rear-mounted ripper

Fig. 2: a rear frame for a grader according to fig. 1

Fig. 3: a rear view of the grader according to fig. 1 with a rear-mounted ripper and a sectional view through the rear end-plate

Fig. 4: a rear view of a grader without rear-mounted equipment with a rear end plate of great wall thickness and an enlarged sectional view through the rear end-plate

In figure 1 a complete grader is shown, in which its vehicle part consists essentially of a tandem axle 2 attached to the rear frame 1, an engine compartment 3 with engine, a driver's cab 4 and a rear end-plate 5 belonging to the rear frame 1. This rear end-plate 5 is at the same time the rear counterpoise 6, bumper 7 and point of attachment for the lights 8 for the grader. In this example embodiment a so-called rear-mounted ripper 9 is fixed onto the rear frame 1, which represents the most frequently occurring piece of rear-mounted equipment 10, which includes for example also a vibratory plate not shown here.

The front part of the grader is formed from the front frame 11, which is supported above the front axle 12 and the front wheels 13 upon the ground. Beneath the front frame 11 the implement 14 is arranged, which consists of the share 15, the slewing gear 16 and the swivel seating 17. An optional front dozer blade 18 arranged in front of the front wheels 13 is carried on the front frame 11.

Figure 2 shows the rear frame 1 and the rear end-plate 5 of the grader in accordance with figure 1 as an exploded diagram. In this case the rear frame 1 is designed in a box shape, consisting of a head piece 19, a left longitudinal beam 20, a right longitudinal beam 21 and a rear transverse beam 22 connecting both ends of the longitudinal beams 20 and 21.

In figure 3 the rear view of the grader according to the first example embodiment of figures 1 and 2 is depicted, which is envisaged for use with a rear-mounted implement 10 with a high weight. Therefore here the rear end-plate 5 has a relatively small wall thickness, in order, together with a heavy piece of rear-mounted equipment 10, for example a rear-mounted ripper 9, to provide an optimum axle load distribution for the grader. To be seen well here is also the lighting 8 integrated into the rear end plate 5, where on both sides at its outer ends a combined brake light/tail light and flasher 23 and inside as well a reversing light are located. To enable the ripping cylinder for the rear-mounted ripper 9 to pass through the rear end plate, the rear end plate has been equipped with recesses 25. For the releasable attachment of the rear end plate 5 on the rear transverse beam 22 there are several screwed connections 26.

The second example embodiment of a grader in accordance with the invention for deployment without a rear-mounted implement 10 is shown in figure 4, where the rear end plate 5 has a considerably greater wall thickness than in the first example.

List of reference symbols

- 1 rear frame
- 2 tandem axle
- 3 engine compartment
- 4 driver's cab
- 5 rear end plate
- 6 rear counterpoise
- 7 bumper
- 8 lights
- 9 rear-mounted ripper
- 10 rear equipment
- 11 front frame
- 12 front axle
- 13 front wheels
- 14 implement
- 15 share
- 16 slewing gear
- 17 swivel seating
- 18 front dozer blade
- 19 head piece
- 20 left longitudinal beam
- 21 right longitudinal beam
- 22 rear transverse beam
- 23 brake-/flasher-/tail lights
- 24 reversing light
- 25 recess
- 26 screwed connection